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Description

This invention relates to beverage dispensing systems and in particular to a binary syrup system in which the syrup is provided in two separate containers holding two different syrup components rather than being provided in one single container. This allows certain component(s) to be separated from certain other component(s), until just prior to dispensing, when the two components are combined to form the complete syrup.

A larger number of beverage dispensing systems are known for use with both sugar syrups and diet syrups, and for use with various types of syrup containers such as pressurized tanks (figals) and non-pressurized plastic bags (bag-in-box) used in conjunction with syrup pumps. The known bag-in-box bags include a spout and a valve connected to the spout for opening or closing liquid communication with the syrup in the bag. At the retail outlet a quick-disconnect coupling is attached to the bag valve to open it and to allow syrup to be fed to a beverage dispenser by means of a syrup pump connected between the bag and the dispenser.

It is an object of the present invention to provide a binary (or dual) syrup bag and valve.

EP-A-0134142 discloses a bag valve for a binary syrup bag for use in beverage dispensing comprising: a valve body; and a pair of separate liquid flow channels through said body.

The present invention is characterised in that there is provided: a spring retainer connector below said body, said flow channels being provided in said connector; said connector being connected to said body by a snap fit with a liquid-tight interference fit therebetween; a poppet valve in each said channels between said body and said connector, a spring in each of said channels in said connector for biasing said poppet valves closed against a valve seat in said body, and a poppet activating pin attached to each poppet valve and extending upwardly through said channel in said body, said poppet valves being in a normally closed position when no coupler is attached to said valve; and said body including means for coupling a hose coupler to said valve.

In a preferred embodiment of the invention, the valve is connected to a bag spout, said valve having said pair of separate liquid flow channels therethrough in liquid communication with a respective one of corresponding spout flow channels.

The valve includes means for connecting it to a syrup hose coupler, and attachment of the coupler causes the poppet valves to open. A pair of dip strips is preferably connected to the spout, with one in each bag.

In a preferred embodiment of the invention not only the connection between the two parts of the

valve but also that between the valve and the spout are snap-in interference fits to provide easy liquid-tight connections that can be made by automatic machinery. When the binary syrup bag and valve are shipped to the retail outlet, there is preferably provided a quick-disconnect coupling that can be permanently installed in the retail outlet and which is attachable to the valve to move the valve to its open position to allow each of the two syrup components to be dispensed from the two bags and fed to the beverage dispenser.

Specific embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings wherein like reference numerals refer to like elements and wherein:

Fig. 1 is a diagrammatic view of the overall beverage dispensing system in which the binary bag and valve of this invention is used;

Fig. 2 is a partial plan view of the binary bag and spout of this invention;

Fig. 3 is a cross-sectional side view through the spout, bag valve and quick-disconnect coupling of this invention;

Fig. 4 is a cross-sectional view through Fig. 3 taken along line 4-4 thereof;

Fig. 5 is a cross-sectional view through Fig. 3 taken along line 5-5 thereof; and

Fig. 6 is a cross-sectional view through a spout, bag valve, and coupling according to an alternative embodiment of this invention.

With reference now to the drawings, Figs. 1 to 5 show the preferred embodiment of the present invention of a binary syrup system 10 including a pair of bag-in-box syrup bags 12 and 14 each holding a different component of the syrup, a metering device 16 for ensuring the proper ratio of the two components being fed to a dispenser, a syrup pump 18 and a beverage dispenser 20. The metering device includes two inlet ports, one for each of the syrup components, and a single outlet port for the complete syrup formed when the two components are combined in the correct ratio, for example, 1:1. The two bags 12 and 14 are contained in a single box 22. A well known bag-in-box system for syrup now uses one single five gallon bag in a box and the present invention preferably uses two two and one-half gallon bags 12 and 14 in a single box 22.

Fig. 2 shows the two bags 12 and 14 and a spout 24 connected to both bags 12 and 14 with a dip strip 26 connected to the spout and contained in bag 12 and a dip strip 28 connected to the spout and contained in bag 14. Fig. 3 also shows the spout 24 and the manner of connecting the spout to the two bags 12 and 14. Two bags are preferably formed from one pair of bag walls, one of the walls having a single opening therethrough. The

spout flange 30 is preferably heat sealed to said one wall and a liquid-tight seam 32 is used to form a single larger bag into the two separate bags 12 and 14. The seam is interrupted at the spout where the other wall is heat sealed to a bottom edge of a wall 34 which extends diametrically across the bottom opening in the spout 24. The two dip strips 26 and 28 are connected to a single ring 36 which snaps into place in the bottom opening of the spout 24. Other arrangements can be used for connecting dip strips to the spout and other shapes and sized of dip strips can be used. Alternatively, the present invention can be used without any dip strips.

The valve 40 of the present invention will now be described with reference to Figs. 3, 4 and 5. The valve 40 provides for two separate liquid channels in one valve structure. One end of each channel is open to one of the bags. The other end of each channel is closed by a poppet valve which is activated (opened) when a coupler is attached to the open side of the valve.

The valve includes the following components. A valve body 42 which incorporates the seats for the two poppet valves 52 and 56. The open end of the valve body has been designed to receive the coupler 80 which has two cylinders 66 and 68 which fit in the two sockets 67 and 69 containing the poppet activating pins 71 and 73. External thread 86 is provided to receive a screw cap to protect the valve during storage and shipping. The other end of the valve body has been designed to receive the spring retainer/connector 44 to the spout. The outside of the cylindrical section of the valve body has been designed to provide two click stops inside the spout. The first one for temporary insertion of the valve body in the bag spout. This arrangement allows for use of the valve as a temporary "dust cap" until each side of the dual bag is ready to be filled. The second click stop is for permanent installation of the valve after filling.

The valve 40 also includes the two poppet valves 52 and 56 with integral activating pins 71 and 73. A pair of springs 50 and 54 bias the poppets against the valve seats.

The spring retainer/connector 44 to the spout contains the springs 50 and 54 providing sealing pressure for each of the two poppets. The connector 44 is held in place by a groove 92 in the valve body. Each of the two flow channels in the connector 44 containing a spring is locked into the valve body with a snap in interference fit seal. The same sealing arrangement is used to seal the other end of each channel into a corresponding socket 94 and 96 in the spout 24.

The valve body, the connector, the two springs and two poppet valves, when assembled together are the valve.

The spout is permanently sealed to the bags. Each bag compartment is connected to one of the two channels in the valve.

Fig. 3 shows the valve 40 in its closed position in solid lines and in open position in dotted or phantom lines. Fig. 3 also shows the coupler 80 including a pair of stainless steel barb connectors 81 and 82 connected to hoses 83 and 84 (the hoses are not transparent but are shown as such for clarity). The valve 40 includes external screw threads 86 that mate with internal screw threads 87 in the coupler 80. The quick-disconnect coupler 80 is simply screwed on to the valve 40 to open the valve allowing syrup to be pumped out of the bags 12 and 14. The coupler 80 includes the connectors 81 and 82, preferably of stainless steel molded to a central element 98, the nut 99 that can rotate relative to the element 98, and the two cylinders 66 and 68 with their spring loaded caps 72 and 76 that contact and move the poppet activating pins 71 and 73. The two cylinders are attached or made integrally with the element 98. The caps 72 and 76 have flow passages therethrough. As the coupler 80 moves downwardly (as viewed in Fig. 3) the springs 70 and 74 eventually are compressed to an extent that they exert a greater force on the poppet valves than is exerted by the springs 50 and 54 causing the poppet valves 52 and 56 to open (to move downwardly away from their valve seats as viewed in Fig. 3). The valve 40 is now open, so that when the pump 18 is operated, syrup will be fed out of the bags 12 and 14 to the dispenser.

The spring retainer/connector 44 is attached to the body 42 by a snap-in, liquid-tight interference fit at 108 and also by the groove 92. The lower end (as viewed in Fig. 3) of the two cylinders 47 and 49 snap-fit in a liquid-tight interference fit to the upper end of the two cylinders 102 and 104 that extend up from a lower wall 106 of the spout. The body 42 is snap-fit to the spout at 41 with an interference fit although a liquid-tight fit is not necessary at 41.

The connector 44 has two flow channels 46 and 48 therethrough in cylinders 47 and 49 which retain the springs 50 and 54. The two cylinders 66 and 68 in the coupler 80 have two flow channels 62 and 64 respectively and retain the springs 70 and 74 respectively.

The snap-fit feature of the valve body and connector and of the valve into the spout allow for ease of assembly and also of automated assembly, if desired.

When it is desired to fill the bags, the valve is removed from the spout, the bags filled, and then the spout is reinserted and this time for a permanent attachment. The various snap-fits are made possible because of the use of circular cross-section passages and circular retaining flanges.

To properly orient the coupler 80 to the valve 40 so that the liquid flow channels will be in proper alignment and so that the cylinders 66 and 68 will be properly inserted into the sockets 67 and 69, a keyway is provided. A rib 110 in the valve body is received in a slot 112 in the plate 114 connected to the cylinders 66 and 68. Fig. 5 shows guide ribs 116 for the pins 71 and 73. It is understood that chamfered or tapered edges are provided at all snap-fit areas.

Fig. 6 shows an alternative embodiment of a valve and coupler according to another embodiment of the present invention.

Although the two bags are shown as being connected, this is not essential; they can be separated with the only connection being the spout.

Claims

1. A bag valve for a binary syrup bag for use in beverage dispensing comprising:
 - a valve body (42); and
 - a pair of separate liquid flow channels (46,48) through said body (42), characterized in that there is provided:
 - a spring retainer connector (44) below said body (42), said flow channels being provided in said connector (44);
 - said connector (44) being connected to said body (42) by a snap fit with a liquid-tight interference fit (108) therebetween;
 - a poppet valve (52,56) in each said channels between said body (42) and said connector (44), a spring (50,54) in each of said channels (46,48) in said connector (44) for biasing said poppet valves (52,56) closed against a valve seat in said body (42), and a poppet activating pin (71,73) attached to each poppet valve (52,56) and extending upwardly through said channel in said body, said poppet valves (52,56) being in a normally closed position when no coupler (80) is attached to said valve (40); and
 - said body (42) including means for coupling a hose coupler (80) to said valve.
2. A bag valve as claimed in claim 1, wherein said body (42) and said connector (44) each include a circular snap-fit retaining flange (41) for use in connecting to a bag spout (24).
3. A binary syrup bag (12,14) for use in beverage dispensing comprising:
 - a pair of separate flexible, collapsible bags (12,14), each having a single liquid opening, in a single bag-in-box box (22);
 - a single spout (24), having a pair of separate liquid flow channels therethrough, con-

nected to both of said bags (12,14), with one of said flow channels in liquid communication with said opening in one of said bags (12,14) and the other flow channel in liquid communication with said opening in the other of said bags; and

a valve (40) as claimed in claim 1 or 2, said valve (40) being connected to said spout (24), said pair of separate liquid flow channels (46,48) of the valve being in liquid communication with a respective one of said spout flow channels, said valve (40) being connected to said spout (24) by a snap-in, liquid-tight, interference fit (41).

4. A bag as claimed in claim 3, comprising a quick-disconnect coupler (80) attachable to said valve (40), and means for moving said valve (40) from a closed to an open position when said coupler (80) is attached to said valve (40).
5. A bag as claimed in claim 3 or 4, comprising a single dip strip unit (26,28,36) connected to said spout (24) and including a pair of separate dip strips (26, 28), one positioned in the interior of each of said bags (12,14).
6. A bag as claimed in claim 3, 4 or 5, wherein said pair of bags (12,14) is formed from a single pair of bag walls including a liquid-tight seam (32) down the middle of said pair of bag walls, a single spout opening in one of said bag walls directly in line with said seam (32), said seam (32) being interrupted at said spout (24), and said other bag wall being sealed to a bottom edge of a diametrical wall (34) of said spout (24).
7. A binary syrup system (10) for beverage dispensing from two separate syrup containers (12,14) each holding a different syrup component comprising:
 - (a) a pair of syrup bags (12,14) in a single bag-in-box box (22);
 - (b) a single spout (24) connected partly to one of said bags (12,14) and partly to the other of said bags (12,14);
 - (c) a bag valve (40) as claimed in claim 1 or 2, said valve (40) being connected to said spout (24) and being movable between open and closed positions; and
 - (d) said spout (24) having a pair of separate liquid flow channels therethrough, one of said flow channels being in liquid flow communication with the interior of one of said bags (12) and the other of said flow channels being in liquid flow communication with

the interior of the other of said bags (14), and the separate liquid flow channels (46,48) of the valve (40) being in liquid communication with a respective one of said spout flow channels, the valve (40) and spout (24) being connected to each other by a snap-in interference fit (41) and said flow channels in said spout are sealed to those in said valve as a result of the interference fit between the valve (40) and spout (24).

8. A system as claimed in claim 7, wherein said pair of bags comprises a single bag with a liquid-tight seam (32) down the middle thereof separating said single bag into said two separate bags (12,14), and wherein said spout (24) is located on said seam (32).
9. A system as claimed in claim 7 or 8, wherein said flow channels (46,48) all have circular cross-sections.
10. A system as claimed in any of claims 7 to 9, said valve (40) includes external screw threads (86) for connecting to a quick-disconnect hose coupler (80).
11. A system as claimed in any preceding claim, comprising a hose coupler (80) connectable to said valve (40), said hose coupler (80) comprising means for moving said valve (40) from its closed to its open position.
12. A system as claimed in claim 10 or 11, wherein a keyway is provided between said coupler (80) and valve (40) so that the respective flow channels of the coupler (80) and the valve (40) are aligned.

Patentansprüche

1. Beutelventil für einen Zweikomponenten-Sirupbeutel zum Einsatz bei der Getränkeausgabe, welches folgendes aufweist:
 - einen Ventilkörper (42); und
 - ein Paar von gesonderten Flüssigkeitsströmungskanälen (46, 48), welche durch den Körper (42) gehen, dadurch gekennzeichnet, daß folgendes vorgesehen ist:
 - ein Federhalteverbinder (44) unterhalb des Körpers (42), wobei die Strömungskanäle in dem Verbinder (44) vorgesehen sind;
 - der Verbinder (44) mit dem Körper (42) mittels einer Schnappsitzpassung mit einer flüssigkeitsdichten Festsitzpassung (108) dazwischen verbunden ist;
 - ein Tellerventil (52, 56) in jedem der Kanäle

le zwischen dem Körper (42) und dem Verbinder (44), eine Feder (50, 54) in jedem der Kanäle (46, 58) in dem Verbinder (44) zur Vorbelastung der Tellerventile (52, 56) in Schließstellung gegen einen Ventilsitz in dem Körper (42), und einen das Tellerventilglied beaufschlagenden Stift (71, 73), welcher an jedem Tellerventil (52, 56) angebracht ist und sich durch den Kanal in den Körper erstreckt, wobei die Tellerventile (52, 56) in einer im Grundzustand geschlossenen Position sind, wenn keine Kupplung (80) an dem Ventil (40) angebracht ist; und

der Körper (42) eine Einrichtung zum Ankuppeln einer Schlauchkupplung (80) an das Ventil umfaßt.

2. Beutelventil nach Anspruch 1, bei dem der Körper (42) und der Verbinder (44) jeweils einen kreisförmigen SchnappsitzHalteflansch (41) zum Einsatz in Verbindung mit einem Beutelauslaß (24) umfassen.

3. Zweikomponenten-Sirupbeutel (12, 14) zur Verwendung bei der Getränkeausgabe, welcher folgendes aufweist:

ein Paar von gesonderten, flexiblen, zusammenlegbaren Beutein (12, 14), welche jeweils eine einzige Flüssigkeitsöffnung haben, in einer einzigen Anordnung aus einem Beutel in einer Schachtel (22);

einen einzigen Auslaß (24), welcher ein Paar vorgesonderten durch denselben gehenden Flüssigkeitsströmungskanälen hat, und der mit beiden Beutein (12, 14) verbunden ist, wobei einer der Strömungskanäle in Flüssigkeitsverbindung mit der Öffnung in einem der Beutel (12, 14), und der andere Strömungskanal in Flüssigkeitsverbindung mit der Öffnung in dem anderen Beutel ist; und

ein Ventil (40) nach Anspruch 1 oder 2, wobei das Ventil (40) mit dem Auslaß (24) verbunden ist, das Paar von gesonderten Flüssigkeitsströmungskanälen (46, 48) des Ventils in Flüssigkeitsverbindung mit einem der zugeordneten Auslaßströmungskanäle ist, und das Ventil (40) mit dem Auslaß (24) mittels einer flüssigkeitsdichten Einschnapp-Festsitzpassung (41) verbunden ist.

4. Beutel nach Anspruch 3, welcher eine Schnellöse-Kupplung (80) aufweist, die an dem Ventil (40) anbringbar ist, und eine Einrichtung zum Bewegen des Ventils (40) aus einer Schließstellung in eine Offenstellung aufweist, wenn die Kupplung (80) an dem Ventil (40) angebracht ist.

5. Beutel nach Anspruch 3 oder 4, welcher eine einzige Tauchband-Einheit (26, 28, 36) aufweist, die mit dem Auslaß (24) verbunden ist, und ein Paar von gesonderten Tauchbändern (25, 28) umfaßt, von denen je eines im Inneren des jeweiligen Beutels (12, 14) angeordnet ist.
6. Beutel nach Anspruch 3, 4 oder 5, bei dem das Paar von Beuteln (12, 14) von einem einzigen Paar von Beutelwänden gebildet wird, welche eine flüssigkeitsdichte Naht (32) von der Mitte des Pairs von Beutelwänden nach unten verlaufend umfaßt, eine einzige Auslaßöffnung in einer der Beutelwände direkt unter Ausrichtung zu der Naht (32) vorgesehen ist, die Naht (32) an dem Auslaß (24) unterbrochen ist und die andere Beutelwand mit einem Bodenrand einer diametral gegenüberliegenden Wand (34) des Auslasses (24) einen dichten Abschluß bildet.
7. Zweikomponenten-Sirupsystem (10) für die Getränkeabgabe aus zwei gesonderten Sirupbehältern (12, 14), welche jeweils eine unterschiedliche Sirupkomponente enthalten, welches folgendes aufweist:
 - (a) ein Paar von Sirupbeuteln (12, 14) in einer einzigen Anordnung aus einem Beutel in einer Schachtel (22);
 - (b) ein einziger Auslaß (24), welcher teilweise mit einem der Beutel (12, 14) und teilweise mit dem anderen Beutel (12, 14) verbunden ist,
 - (c) ein Beutelventil (40) nach Anspruch 1 oder 2, wobei das Ventil (40) mit dem Auslaß (24) verbunden ist, und zwischen einer Offenstellung und einer Schließstellung beweglich ist; und
 - (d) der Auslaß (24) ein Paar von gesonderten, durch denselben gehenden Flüssigkeitsströmungskanälen hat, von denen einer in Flüssigkeitsströmungsverbindung mit dem Inneren einer der Beutel (12) und der andere Strömungskanal in Flüssigkeitsströmungsverbindung mit dem Inneren des anderen Beutels (14) ist, die gesonderten Flüssigkeitsströmungskanäle (46, 48) des Ventils (40) in Flüssigkeitsverbindung mit jeweils einem zugeordneten der Auslaßströmungskanäle sind, das Ventil (40) und der Auslaß (24) miteinander mit Hilfe einer Einschnapp-Paßverbindung (41) verbunden sind, und die Strömungskanäle in dem Auslaß gegenüber jenem in dem Ventil infolge der Festsitzverbindung zwischen dem Ventil (40) und dem Auslaß (24) abdichtet sind.

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8. System nach Anspruch 7, bei dem das Paar von Beuteln einen einzigen Beutel mit einer flüssigkeitsdichten Naht (32) von dem Mittelbereich nach unten weisend aufweist, welche den einzigen Beutel in zwei gesonderte Beutelteile (12, 14) trennt, und bei dem der Auslaß (24) auf der Naht (32) liegt.
9. System nach Anspruch 7 oder 8, bei dem die Strömungskanäle (46, 48) alle kreisförmige Querschnitte haben.
10. System nach einem der Ansprüche 7 bis 9, wobei das Ventil (40) ein Außenschraubgewinde (86) zur Verbindung mit einer Schnellöse-Schlauchkupplung (80) umfaßt.
11. System nach einem der vorangehenden Ansprüche, welches eine Schlauchkupplung (80) aufweist, welche mit dem Ventil (40) verbindbar ist, wobei die Schlauchkupplung (80) eine Einrichtung zum Bewegen des Ventils (40) von seiner Schließstellung in seine Offenstellung aufweist.
12. System nach Anspruch 10 oder 11, bei dem eine Keilnut zwischen der Kupplung (80) und dem Ventil (40) derart vorgesehen ist, daß die zugeordneten Strömungskanäle der Kupplung (80) und des Ventils (40) ausgerichtet sind.

Revendications

1. Clapet de sac pour un double sac à sirop à utiliser dans un distributeur de boisson, comprenant :
un corps de clapet (42) ; et
une paire de canaux séparés d'écoulement de liquide (46,48) à travers ledit corps (42),
caractérise en ce que sont prévus :
un connecteur de retenue à ressort (44) au dessous dudit corps (42), lesdits canaux d'écoulement étant ménagés dans ledit connecteur (44);
ledit connecteur (44) étant connecté audit corps (42) par encliquetage, avec interposition d'un joint imperméable à ajustement serré (108);
une soupape (52,56) dans chacun desdits canaux, entre ledit corps (42) et ledit connecteur (44), un ressort (50,54) dans chacun desdits canaux (46,48) dudit connecteur (44), pour repousser lesdites soupapes (52,56) étroitement contre un siège dudit corps (42), et un ergot d'activation (71,73) de soupapes, fixé sur chaque soupape (52,56) et s'étendant vers le haut à travers ledit canal dans ledit corps, lesdites soupapes (52,56) étant dans une position nor-

- male fermée lorsqu'aucun coupleur (80) n'est fixé sur ledit clapet (40) ; et ledit corps (42) incluant des moyens permettant d'accoupler un coupleur pour tuyau (80) audit clapet.
2. Clapet de sac selon la revendication 1, dans lequel ledit corps (42) et ledit connecteur (44) incluent chacun une bride de retenue (41) circulaire encliquetable, à utiliser pour une connexion à un orifice de sac (24).
3. Sac double à sirop (12,14) à utiliser dans un distributeur de boisson, comprenant : une paire de sacs (12,14) séparés, flexibles et repliables, chacun ayant une ouverture unique de liquide, au sein d'une seule boîte à sac (22) ; un orifice (24) unique au sein duquel est ménagée une paire de canaux séparés d'écoulement de liquide, connectés aux deux desdits sacs (12,14) avec l'un desdits canaux d'écoulement en communication par le liquide avec ladite ouverture de l'un desdits sacs (12,14) et l'autre canal d'écoulement en communication par le liquide avec ladite ouverture de l'autre desdits sacs ; et un clapet (40) selon la revendication 1 ou 2, ledit clapet (40) étant connecté audit orifice (24), ladite paire de canaux séparés d'écoulement de liquide (46,48) du clapet étant en communication par le liquide avec l'un respectivement desdits canaux d'écoulement, ledit clapet (40) étant connecté audit orifice (24) par l'intermédiaire d'un joint à ajustement serré (41) encliquetable et imperméable.
4. Sac selon la revendication 3, comprenant un coupleur à déconnexion rapide (80) fixé audit clapet (40), et des moyens permettant de déplacer ledit clapet (40) à partir d'une position fermée vers une position ouverte, lorsque ledit coupleur (80) est fixé audit clapet (40).
5. Sac selon l'une des revendications 3 ou 4, comprenant une unité unique (26,28,36) connectée audit orifice (24) et incluant une paire de bandes inclinées séparées (26,28), chacune étant positionnée à l'intérieur de chacun desdits sacs (12,14).
6. Sac selon la revendication 3, 4 ou 5, dans lequel ladite paire de sacs (12,14) est formée à partir d'une paire unique de parois de sac incluant une jonction imperméable (32) le long du milieu de ladite paire de parois de sac, une ouverture d'orifice unique dans l'une desdites parois de sac directement en relation avec ladite jonction (32), ladite jonction (32) étant interrompue au niveau dudit orifice (24), et ladite autre paroi de sac étant scellée à un bord inférieur d'une paroi diamétralement opposée (34) dudit orifice (24).
7. Double système à sirop (10) pour distributeur de boisson, à partir de deux récipients (12,14) séparés de sirop, chacun contenant un composant de sirop différent, comprenant : a) une paire de sacs à sirop (12,14) au sein d'une seule boîte à sacs (22) ; b) un orifice (24) unique connecté en partie à l'un desdit sacs (12,14) et en partie à l'autre desdits sacs (12,14) ; c) un clapet de sac (40) selon la revendication 1 ou 2, ledit clapet (40) étant connecté audit orifice (24) et étant déplaçable entre des positions ouvertes et fermées ; et d) ledit orifice (24) ayant une paire de canaux séparés d'écoulement de liquide ménagé en son sein, l'un desdits canaux d'écoulement étant en communication par l'écoulement de liquide avec l'intérieur de l'un desdits sacs (12) et l'autre desdits canaux d'écoulement étant en communication par l'écoulement de liquide avec l'intérieur de l'autre desdits sacs (14), et les canaux séparés d'écoulement de liquide (46,48) du clapet (40) étant en communication par le liquide avec l'un respectivement desdits canaux d'écoulement, le clapet (40) et l'orifice (24) étant connectés entre eux par un joint à ajustement serré (41) encliquetable, et lesdits canaux d'écoulement dans ledit orifice étant scellés à ceux dudit clapet, sous l'action du joint à ajustement serré interposé entre le clapet (40) et l'orifice (24).
8. Système selon la revendication 7, dans lequel ladite paire de sacs comprend un sac unique avec une jonction (32) imperméable le long du milieu de ce dernier, séparant ledit sac unique en deux sacs séparés (12,14), et dans lequel ledit orifice (24) est situé sur ladite jonction (32).
9. Système selon la revendication 7 ou 8, dans lequel lesdits canaux d'écoulement (46,48) présentent tous des sections transversales circulaires.
10. Système selon l'une quelconque des revendications 7 à 9, dans lequel ledit clapet (40) inclut un filetage externe (86) permettant la connexion à un coupleur pour tuyau (80) à déconnexion rapide.

11. Système selon l'une quelconque des revendications précédentes, comprenant un coupleur pour tuyau (80) connectable audit clapet (40), ledit coupleur pour tuyau (80) comprenant des moyens permettant de déplacer ledit clapet (40) à partir de sa position fermée jusqu'à sa position ouverte. 5
12. Système selon la revendication 10 ou 11 dans lequel est prévue une rainure de clavette entre ledit coupleur (80) et le clapet (40), de sorte que les canaux d'écoulement respectifs du coupleur (80) et du clapet (40) soient alignés. 10

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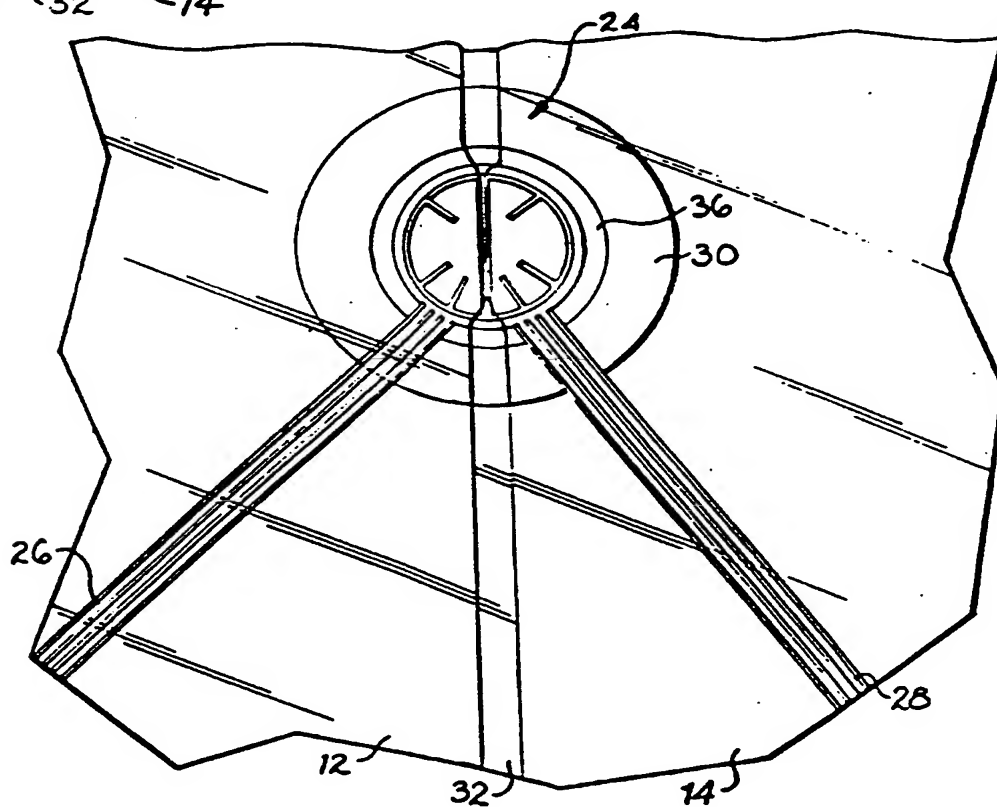
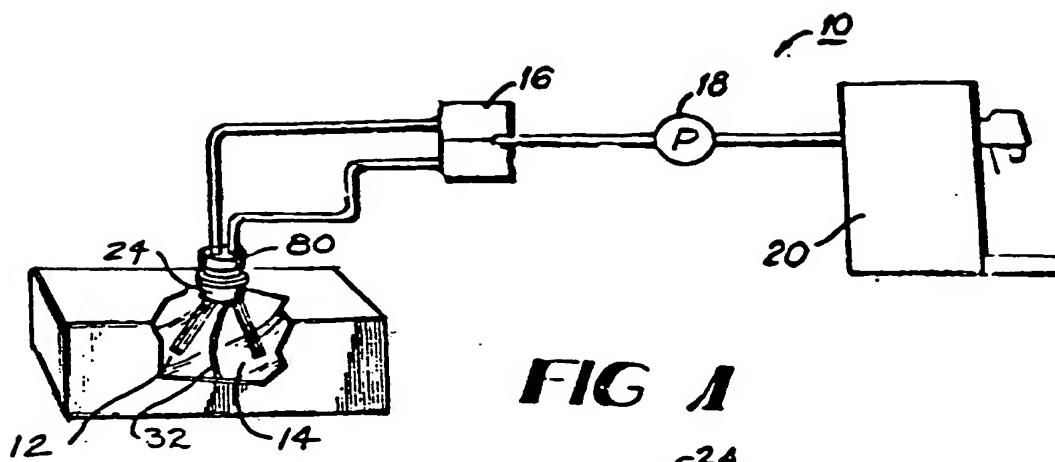
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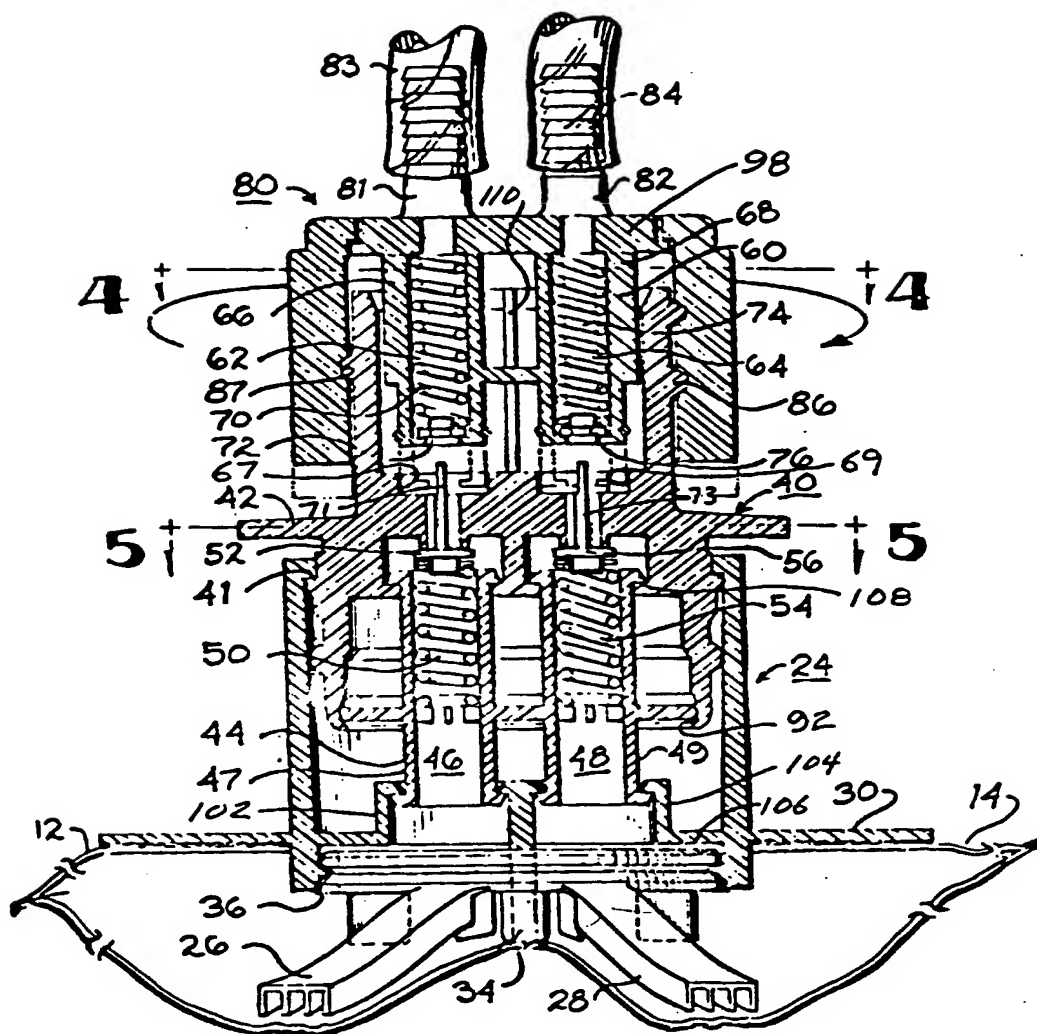


FIG 3

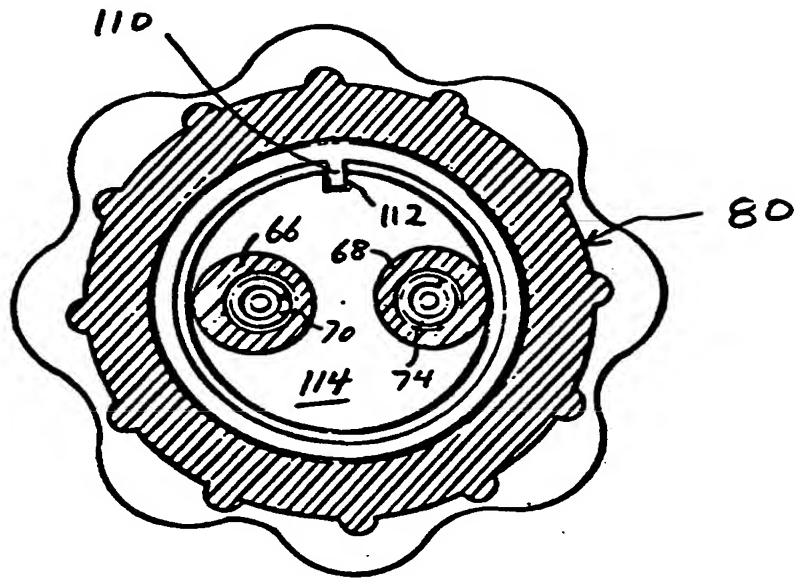


FIG 4

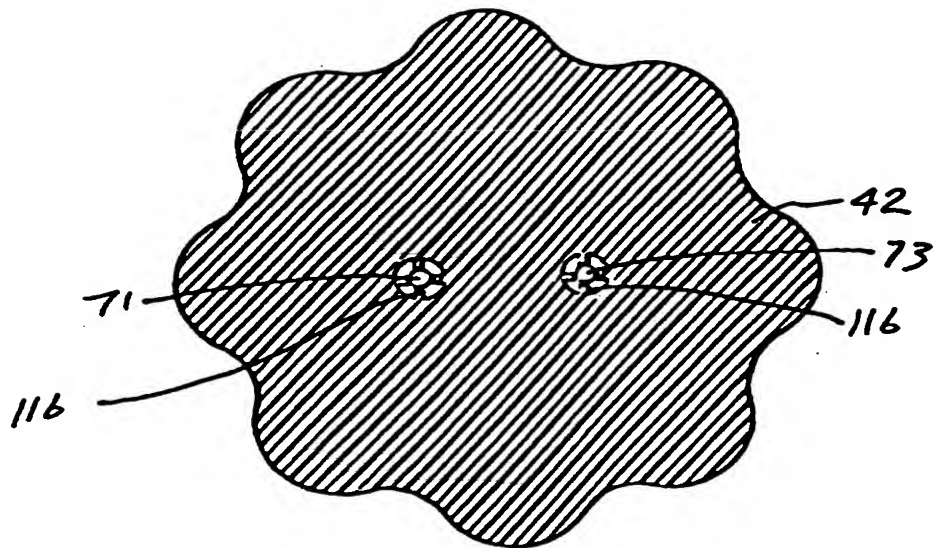


FIG 5

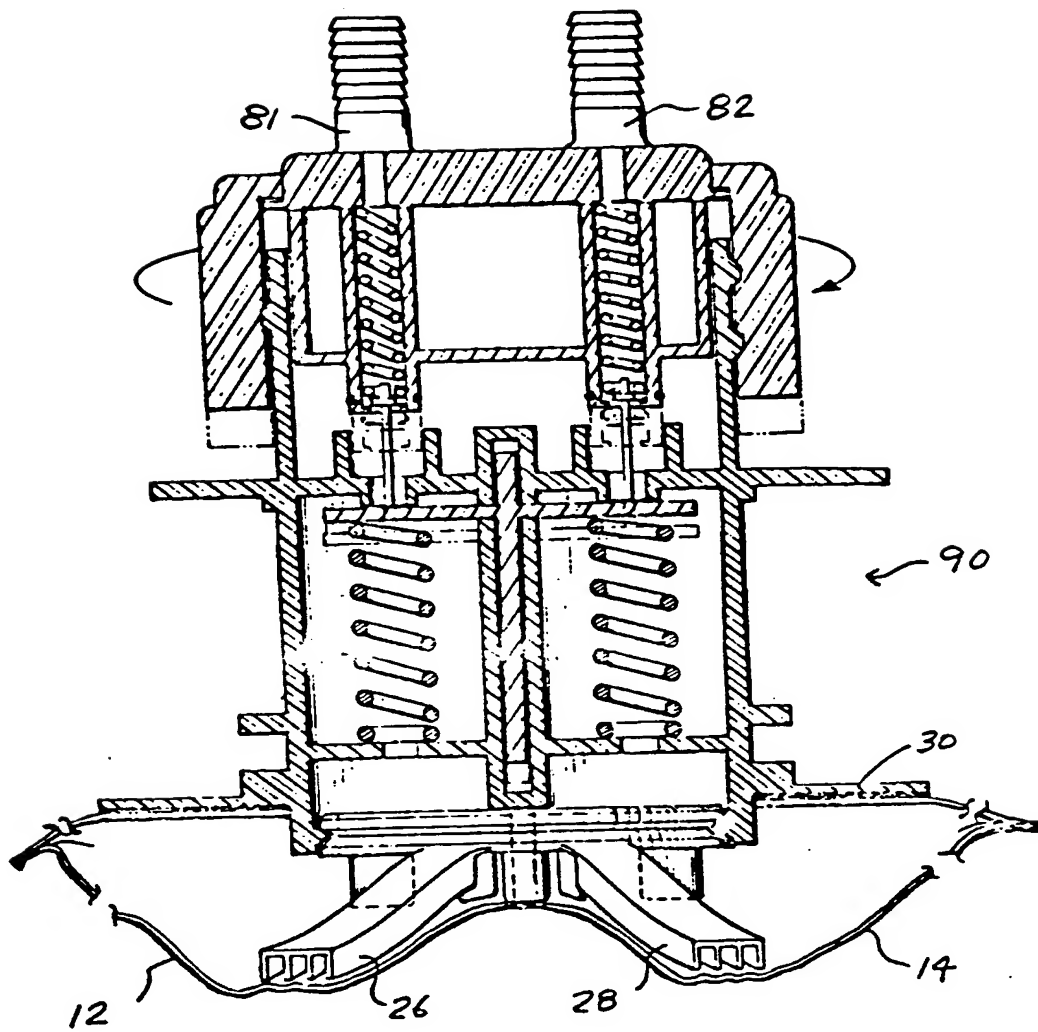


FIG 6